



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/909,863	07/20/2001	Paul E. Dresens	0100.2016-000	8766

7590

02/15/2002

James M. Smith, Esq.  
HAMILTON, BROOK, SMITH & REYNOLDS, P.C.  
Two Militia Drive  
Lexington, MA 02421-4799

EXAMINER

JIANG, CHEN WEN

ART UNIT

PAPER NUMBER

3744

DATE MAILED: 02/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/909,863

Examiner

Chen-Wen Jiang

Applicant(s)

DRESENS ET AL.

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-81 is/are pending in the application.
- 4a) Of the above claim(s) 29-50, 52-55, 65-75 and 79-81 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28, 51, 56-64 and 76-78 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-28, 51, 56-64 and 76-78, drawn to method for controlling distribution of a refrigerant, classified in class 62, subclass 77.
  - II. Claims 29-50, 52, 53, 54, 55, 65-75, 79, 80 and 81, drawn to system for controlling distribution of a refrigerant, classified in class 62, subclass 55.5.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions Group I and Group II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced by another materially different apparatus such as controlled by manually turning the refrigerators off and on and manually controlling the valves or can be practiced by a fluid supply system, in a water pump system or a helium system.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Group I, restriction for examination purposes as indicated is proper.

Application/Control Number: 09/909,863

Art Unit: 3744

5. Should Applicant elect the Group II apparatus claims, then the following election of species is required.
6. This application contains claims directed to the following patentably distinct species of the claimed invention:

Species II-A: fluid supply system

Species II-B: in a water pump system

Species II-C: in a helium system

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 1 is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the

Application/Control Number: 09/909,863

Art Unit: 3744

examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

7. During a telephone conversation with Attorney Christopher Lutz on 2/13/2002 a provisional election was made without traverse to prosecute the invention of Group I, claim 1-28, 51, 56-64 and 76-78. Affirmation of this election must be made by applicant in replying to this Office action. Claims 29-50, 52, 53, 54, 55, 65-75, 79, 80 and 81 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Regarding claim 10, the phrase "helium" renders the claim indefinite because it is unclear whether the limitation(s) because it is not clear the difference between the refrigerant in the claim 1 and the helium in claim 10. See MPEP § 2173.05(d).

Application/Control Number: 09/909,863  
Art Unit: 3744

*Claim Rejections - 35 USC § 102*

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-4,7-9,11,20,24,26,27 and 51 are rejected under 35 U.S.C. 102(b) as being anticipated by Derosier (U.S. Patent Number 5,551,248).

Derosier discloses a control apparatus for space cooling system. Referring to Fig.1, a space cooling system 20 includes an evaporator 21, a condenser 22, a compressor 23 and an expansion valve 24. A microcomputer-based controller 25 is provided to control operation of system 20. In one embodiment, the cooling system includes a plurality of evaporators and a corresponding plurality of controllers electrically interconnected in a series loop for controlling the expansion valves. The system preferably includes a liquid refrigerant input header 38 with branches 39,40 and 41 to the respective indoor units. One of the controllers functions as a master controller and receives inputs from the space temperature sensor and the compressor discharge temperature sensor as well as from the temperature sensors associated with the corresponding evaporator. The master controller activates and deactivates the cooling cycles in response to the inputs from the space temperature sensor. Both the master controller and each slave controller separately control the corresponding expansion valve. A control means includes periodically sampling electrical signal and for iteratively adjusts the position of the expansion valve in selected increments in response to successive samplings of the electrical signal.

Application/Control Number: 09/909,863

Art Unit: 3744

13. Claims 56, 58-64 and 76-78 are rejected under 35 U.S.C. 102(b) as being anticipated by Eacobacci Jr. et al. (U.S. Patent Number 5,775,109).

In regard to claims 56,59,60,64,76 and 77, Eacobacci Jr. et al. disclose a method for regulating the cooldown of multiple cryogenic refrigerators supplied with compressed refrigerant from a common compressor. A group of helium compressors are sometimes manifold together to act as a single source of refrigerant to multiple cryopumps. Referring to Fig.3, a plurality of refrigerators 110 receive compressed helium from a single compressor 112 through a manifold 114. A network terminal 116 is electrically coupled through a control line 118 with each of the refrigerators 110. The network terminal 116 is capable of measuring the temperature of each of the refrigerators 110 and determining whether any of the refrigerators 110 have a temperature below a triggering limit. The network terminal 116 governs the refrigerators within the plurality 110 to increase or decrease the supply of helium that they process depending upon whether they process a temperature above or below the triggering point.

In regard to claims 58,61 and 62, the allocation signal corresponds to units of mass flow rate. Typically, each refrigerator will receive a prorated portion of the gas supply which can be calculated as the refrigerator's maximum consumption multiplied by the ratio of the available supply over the present aggregate maximum consumption of all refrigerators. Examples of the flow rate calculation are provided in columns 5-6.

In regard to claim 78, the governing of cryogenic refrigerator includes adjusting the speed of the displacer.

Application/Control Number: 09/909,863  
Art Unit: 3744

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 5,6,10,12-19,21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derosier (U.S. Patent Number 5,551,248).

Derosier discloses the invention substantially as claimed. Dependent claims 5,6,10,12-19,21 and 22 do not appear to contain any feature which, in combination with the features of any claim to which they refer, involve an inventive step since they are also partly revealed in the prior art or they show mere constructional details which would be within the capabilities of the person skilled in the art. Also, upon a close review of applicant's specification, it appears that the claimed parameters do not have any criticality and/or lead to any new and unexpected results. Therefore, it would have been obvious to one of ordinary skill in the art to have selected the claimed parameters for the calculation in the control stage since these particular parameters provide control calculations that are no better or provided improved performance over that which is commonplace in the prior art.

16. Claims 57 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eacobacci Jr. et al. (U.S. Patent Number 5,775,109).

Eacobacci Jr. et al. disclose the invention substantially as claimed. However, Eacobacci Jr. et al. do not disclose the control loop is a closed feedback loop having regular, predetermined intervals. It is common knowledge in the prior art to have a closed feedback loop having regular,



Application/Control Number: 09/909,863

Art Unit: 3744

predetermined intervals in the control field of endeavor for the purpose of controlling operation. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Eacobacci Jr. et al. with a closed feedback loop having regular, predetermined intervals in order to regulate refrigerant flow rate.

17. Claims 1-28, 51, 56-64 and 76-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morishita et al. (U.S. Patent Number 6,233,948).

Morishita et al. disclose a control apparatus for a plurality of cryopumps. For simultaneously controlling a plurality of cryopumps, one processor and communication conversion sections of the respective cryopumps are connected to each other with a communication network. Figs. 1-6 present different configurations of cryopump control apparatus. The quantity determinations are inherent in the data process. All the claimed control parameters do not appear to contain any feature which, in combination with the features of any claim to which they refer, involve an inventive step since they are also partly revealed in the prior art or they show mere constructional details which would be within the capabilities of the person skilled in the art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Morishita et al. with a known parameters in the prior art to provide the control algorithms. Also, upon a close review of applicant's specification, it appears that the claimed parameters do not have any criticality and/or lead to any new and unexpected results. Therefore, it would have been obvious to one of ordinary skill in the art to have selected the claimed parameters for the calculation in the control stage since these particular parameters provide control calculations that are no better or provided improved performance over that which is commonplace in the prior art.

***Conclusion***

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bartlett et al. (U.S. Patent Number 5,375,424) is made of record as a cryopump with electrically controlled regeneration. Takeshima et al. (JP 09016427) is made of record as a dual control method.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chen-Wen Jiang whose telephone number is (703) 308-0275. The examiner can normally be reached on Monday-Thursday from 6:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on (703) 308-2597. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-5648.

Chen-Wen Jiang  
Patent Examiner  
February 14, 2002

